
Open Access Article

USE OF PON TECHNOLOGY IN SAMARKAND.

Abdugafur Khotamov

Associate Professor of the Samarkand branch, Of TUIT named after Muxammada al-Khorazmiy
abdugafur.xotamov@gmail.com

Tulkin Sultonov

Director of the Samarkand branch of AK “Uzbek Telecom”

Annotation

This article reflects that in recent years the speed of Internet access has increased significantly, which was due to the requirements of new services and resource-intensive applications that can work correctly only with a PON connection from «Uzbek Telecom» joint-stock company (JSC). For this reason, fiber optic technologies have been introduced that can support the current demand for bandwidth. Due to the high data transfer rate, the responsiveness of networks with PON technology from JSC «Uzbek Telecom» is of the greatest importance in comparison with other types of connections and will be an excellent solution for connecting large companies to the Internet.

Key words: splitter, optical splitter, infrared radiation, tree topology.

Introduction

PON Access distribution Network- Passive Optical Network Technology is based on tree fiber cable architecture with Passive Optical Splitter on the nodes represents an economical way to provide broadband information transmission.

In so doing, the PON architecture has the necessary efficiency of building network notes and bandwidth depending on the present and future needs of subscribers.

The main part.

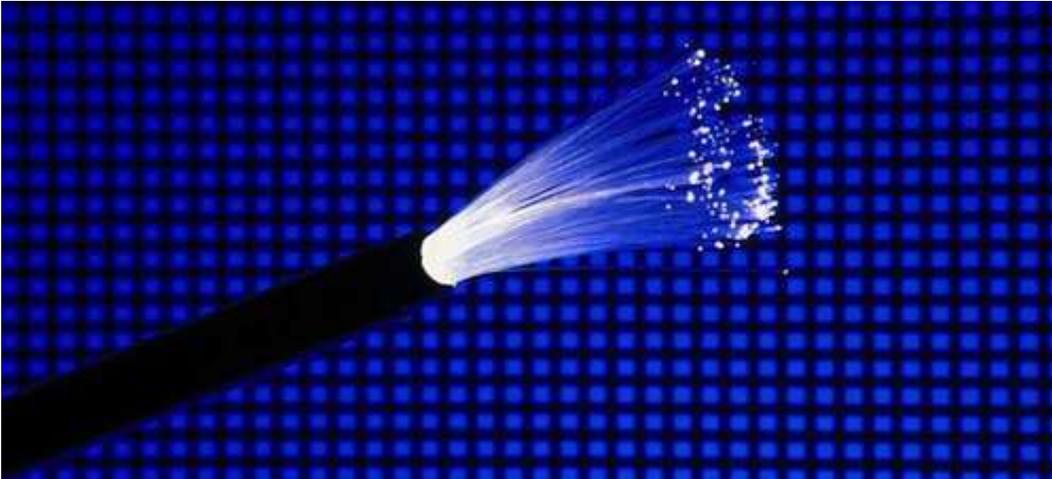
The first steps in PON technology were taken in 1995, When a group of seven companies (British Telecom, France Telecom, Deutsche Telecom, NTT, KPN, Telefonica и Telecom Italia) formed a consortium to implement the idea of multiple single-fiber access. This organization, supported by ITU-T, was named FSAN (Eng. Full service access net work). Many new members, both operators and equipment manufacturers, joined in the late 1990s. The purpose of FSAN was to develop common guidelines and requirements for PON equipment so that equipment manufacturers and operators could coexist together in the competitive market for PON access systems. As of November 2011, FSAN had 26 operators and 50 manufacturers. FSAN works closely with standards organizations such as ITU-T, ETSI and the ATM Forum.

Standards: ITU-T G.983; APON (ATM Passive Optical Network); BPON (Broadband PON); ITU-T G.984; GPON (Gigabit PON); IEEE 802.3ah; EPON or GEPON (Ethernet PON); IEEE 802.3av; 10GEPON (10 Gigabit Ethernet PON).

Received: June, 18, 2022 / Revised: July ,27, 2022 / Accepted: 11, August, 2022 / Published: 26, August, 2022

About the authors : Abdugafur Khotamov

Email: abdugafur.xotamov@gmail.com

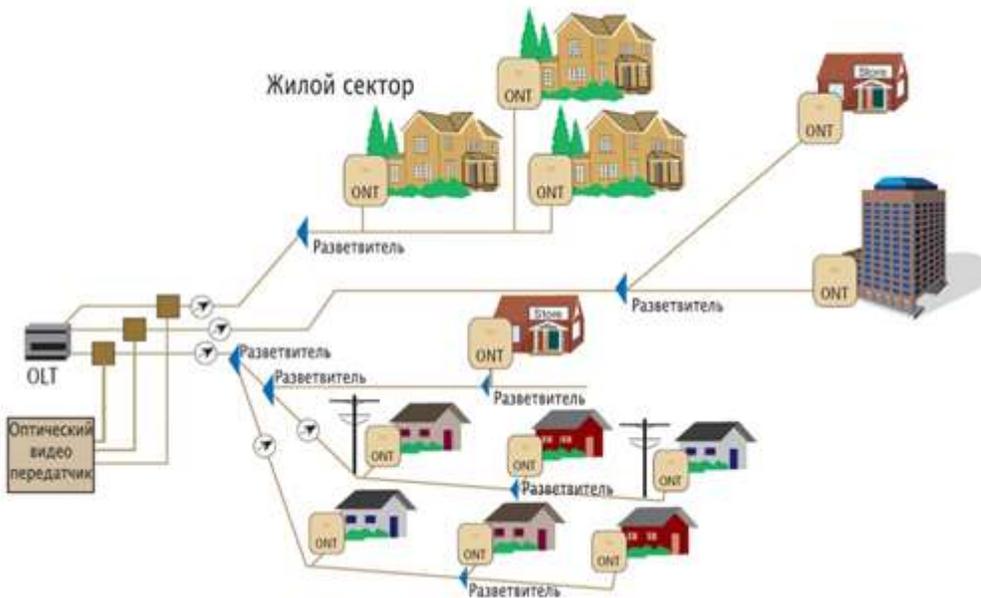


Picture1. This makes the new technology attractive not only to consumers, but also to service providers wishing to replace copper networks in densely populated urban areas.

Advantages of PON technology

- higher speeds than in the case of twisted pair in a classical topology of a multi-subscriber network;
- absence of intermediate active nodes (reliability and cost-effectiveness);
- durability and resistance to external radiation of optical fiber;
- financial advantages: economy of optical transceivers in the central node, fiber savings, one optical fiber per 64 subscribers (in new stations up to 128);
- design convenience for the private sector of residential buildings.

The P2MP tree topology allows you to optimize the placement of optical splitters, based on the actual location of subscribers, the cost of laying the OK and operation of the cable network.



Picture.2 PON connection diagram

Disadvantages of PON network technology

- Increased complexity of PON technology;
- financial disadvantages: high requirements to the quality of materials and FOCL installation (in case of non-compliance - discontinuity of communication), high technology and high cost of repair, not unified standards of equipment and technology with an unclear perspective of their operation because of this.
- Optical dividers are often used, increasing the attenuation. Because of the high attenuation of the signal provided by the PON technology, it is physically impossible to build a tree structure network with a radius of more than 10 km from the optical line terminal (OLT)

Conclusion

Due to high data transfer speeds, the responsiveness of networks with PON technology from Rostelecom has the highest value compared to other types of connections and will be an excellent solution for connecting large companies to the Internet.

At the moment the market speed requirements are quickly approaching the 100 Mbit/sec mark, and it is predicted to reach 1 Gbit/sec for the mass consumer. Only optical cables have the ability to support these high speeds over the long distances that are necessarily present between the ISP and the user.

List of references

1. The Great Polytechnic Encyclopedic Dictionary, 2004.
2. encyclopedia "Technics". - Moscow: Roseman, 2006.
3. GOST 26599-85 "Fiber-optic transmission systems. Terms and definitions".